Amendments to the Claims:

1. (Currently amended) A method of heating a fiber tape for forming a composite article, the method comprising:

providing a feedforward response surface that defines a plurality of data points, wherein each data point correlates a predefined velocity of the fiber tape, a predefined feedforward control value, and a resulting temperature of the fiber tape;

measuring a temperature of the fiber tape;

determining a velocity of the fiber tape;

determining a feedback control value based on the temperature of the fiber tape and a target temperature of the fiber tape;

determining a feedforward control value based only on the target temperature of the fiber tape and the velocity of the fiber tape and according to the feedforward response surface;

determining a heat control value based on the feedback control value and the feedforward control value; and

heating the fiber tape based on the heat control value,

wherein the providing step comprises:

operating a fiber placement machine at the predefined velocity of the fiber tape;

providing the predefined feedforward control value as a heat control value;

measuring the resulting temperature of the fiber tape; and

storing the predefined velocity, the predefined feedforward control value, and the resulting temperature as a data point in the feedforward response surface.

2. (Previously presented) The method of heating a fiber tape of Claim 1 wherein providing a feedforward response surface comprises constructing a feedforward data table of data points, each data point correlating a predefined velocity of the fiber tape, a predefined feedforward control value, and a resulting temperature of the fiber tape, and wherein determining a feedforward control value comprises retrieving a value from the feedforward data table based upon the target temperature and the velocity of the fiber tape.

3. (Original) The method of heating a fiber tape of Claim 2 wherein the constructing step comprises:

operating a fiber placement machine at the predefined velocity of the fiber tape;

providing the predefined feedforward control value as a heat control value;

measuring the resulting temperature of the fiber tape;

storing the predefined velocity, the predefined feedforward control value, and the resulting temperature as a data point in the table of data points.

4. (Original) The method of heating a fiber tape of Claim 2 wherein the constructing step comprises:

calculating the resulting temperature based on the predefined velocity of the fiber tape and the predefined feedforward control value; and

storing the predefined velocity, the predefined feedforward control value, and the resulting temperature as a data point in the table of data points.

5. (Previously Presented) The method of heating a fiber tape of Claim 1 wherein the providing step comprises mathematically defining a correlation between the predefined velocity, the predefined feedforward control value, and the resulting temperature of the fiber tape.

6. (Original) The method of heating a fiber tape of Claim 5 wherein determining a feedforward control value comprises mathematically defining the feedforward control value according to the feedforward response surface and based on the target temperature and the velocity of the fiber tape.

7. (Original) The method of heating a fiber tape of Claim 6 wherein determining the feedforward control value comprises mathematically defining the feedforward control value as:

$$FCV(t) = B_0 + B_V * V + B_T * T + B_{VT} * V * T + B_{TT} * T^2$$

wherein FCV(t) is the feedforward control value as a function of time, T is the target temperature, V is the velocity of the fiber tape, and B_0, B_V, B_T, B_{VT}, and B_{TT} are predefined coefficients.

8. (Original) The method of heating a fiber tape of Claim 1 further including setting the target temperature of the fiber tape.

9. (Original) The method of heating a fiber tape of Claim 1 wherein said step determining a velocity of the fiber tape comprises measuring the velocity of the fiber tape.

10. (Original) The method of heating a fiber tape of Claim 1 further comprising setting a target velocity of the fiber tape and wherein determining a velocity of the fiber tape comprises determining the velocity of the fiber tape based on the target velocity of the fiber tape.

11. (Original) The method of heating a fiber tape of Claim 1 wherein determining a feedback control value comprises determining the feedback control value utilizing proportional-integral-differential control.

12. (Original) The method of heating a fiber tape of Claim 1 wherein determining a heat control value comprises summing the feedback control value and the feedforward control value.

13. (Currently Amended) A method of forming a composite article from a fiber tape, the method comprising:

providing a feedforward response surface that defines a plurality of data points, wherein each data point correlates a predefined velocity of the fiber tape, a predefined feedforward control value, and a resulting temperature of the fiber tape;

irradiating the fiber tape with a laser diode array;

compacting the irradiated fiber tape against a workpiece such that the fiber tape conforms to the contour of the workpiece and is adhered thereto;

measuring a temperature of the fiber tape;

determining a velocity of the fiber tape;

determining a feedback control value based on the temperature of the fiber tape and a target temperature of the fiber tape;

determining a feedforward control value based only on the target temperature of the fiber tape and the velocity of the fiber tape and according to the feedforward response surface;

determining a heat control value based on the feedback control value and the feedforward control value; and

heating the fiber tape based on the heat control value,

wherein said providing step comprises operating a fiber placement machine at the predefined velocity of the fiber tape;

providing the predefined feedforward control value as a heat control value;

measuring the resulting temperature of the fiber tape;

storing the predefined velocity, the predefined feedforward control value, and the resulting temperature as a data point in the feedforward response surface.

14. (Previously presented) The method of forming a composite article of Claim 13 wherein providing a feedforward response surface comprises constructing a feedforward data table of data points, each data point correlating a predefined velocity of the fiber tape, a predefined feedforward control value, and a resulting temperature of the fiber tape, and wherein

determining a feedforward control value comprises retrieving a value from the feedforward data table based upon the target temperature and the velocity of the fiber tape.

15. (Previously Presented) The method of forming a composite article of Claim 14 wherein the constructing step comprises:

operating a fiber placement machine at the predefined velocity of the fiber tape;

providing the predefined feedforward control value as a heat control value;

measuring the resulting temperature of the fiber tape;

storing the predefined velocity, the predefined feedforward control value, and the resulting temperature as a data point in the table of data points.

16. (Previously Presented) The method of forming a composite article of Claim 14 wherein the constructing step comprises:

calculating the resulting temperature based on the predefined velocity of the fiber tape and the predefined feedforward control value; and

storing the predefined velocity, the test feedforward control value, and the resulting temperature as a data point in the table of data points.

17. (Previously Presented) The method of forming a composite article of Claim 14 wherein the constructing step comprises mathematically defining a correlation between the predefined velocity, the predefined feedforward control value, and the resulting temperature of the fiber tape.

18. (Original) The method of forming a composite article of Claim 17 wherein determining a feedforward control value comprises mathematically defining the feedforward control value according to the feedforward response surface and based upon the target temperature and the velocity of the fiber tape.

19. (Original) The method of forming a composite article of Claim 18 wherein determining the feedforward control value comprises mathematically defining the feedforward control value as:

$$FCV(t) = B_0 + B_V * V + B_T * T + B_{VT} * V * T + B_{TT} * T^2$$

wherein FCV(t) is the feedforward control value as a function of time, T is the target temperature, V is the velocity of the fiber tape, and B_0, B_V, B_T, B_{VT}, and B_{TT} are predefined coefficients.

20. (Original) The method of forming a composite article of Claim 13 wherein determining a feedback control value comprises determining the feedback control value utilizing proportional-integral-differential control.

Claims 21-35 (Cancelled)